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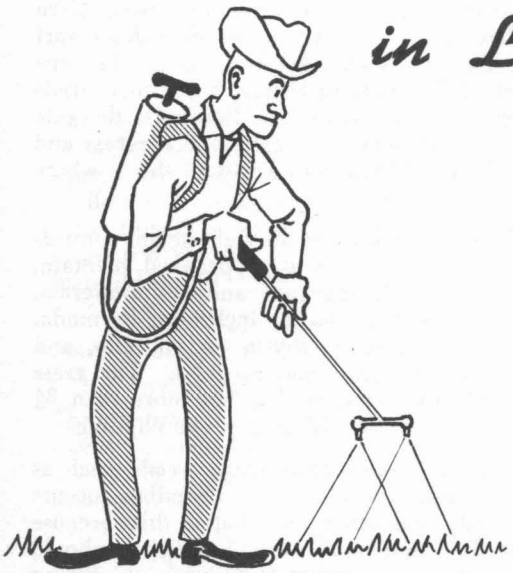
Chemical Weed Control

in Lawns



THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
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Chemical Weed Control In Lawns

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A VIGOROUS TURF is the best control for weeds. Weeds and weedy grasses usually are not a problem when a well-adapted lawngrass is properly established, fertilized, mowed and watered. A thin, weak stand of grass will be invaded by weeds. Killing weeds with chemicals will not keep them out unless followed by lawn management practices that encourage the grass to grow *vigorously enough to compete* with the weeds. Details on lawngrass adaptation and its proper establishment and management are given in Bulletin 203, "Home Lawns," available from your county extension agents.

Thorough seedbed preparation and allowing one or more crops of weeds to germinate before planting the lawngrass will help reduce weed problems. Choosing the right grass is important, because lawn grasses differ in their ability to keep out weeds. Vigorous St. Augustine chokes out most weeds during the growing season. Even winter weeds have little chance to grow in a dense turf of this grass. Summer weeds are not too troublesome in a thrifty turf of Bermuda or zoysia, but winter weeds often are a problem. Compared to Bermuda, the rate and habit of growth of bluegrass, perennial ryegrass and buffalograss make weed invasion a constant threat where they are used as lawn covers.

Regular, frequent mowing at the right height controls many common lawn weeds, such as pepperweed, plantain, buttercup, nightshade, hoarhound and Johnsongrass. Proper mowing heights are 1 to 1½ inches for Bermuda, 1½ inches for St. Augustine, zoysia and buffalo, and 1½ to 2 inches for bluegrass and ryegrass. The grass should be mowed often enough that not more than ¾ to 1 inch of leaf tip is removed at any one clipping.

Proper fertilization eliminates many weeds, such as facelis and three-awn (needlegrass). Sandbur occurs mainly in Bermuda and other turf that is thin because of lack of fertility and moisture. Lawngrass should receive an application of complete fertilizer in the spring and in the fall. The fertilizer should be applied at a rate to supply 2 pounds of actual nitrogen per 1,000 square feet. Additional nitrogen should be applied as needed during the growing season to keep the grass green.

Chemicals should be applied when weeds are growing rapidly and before seed are formed. Treatments usually will not be effective when applied to weeds that

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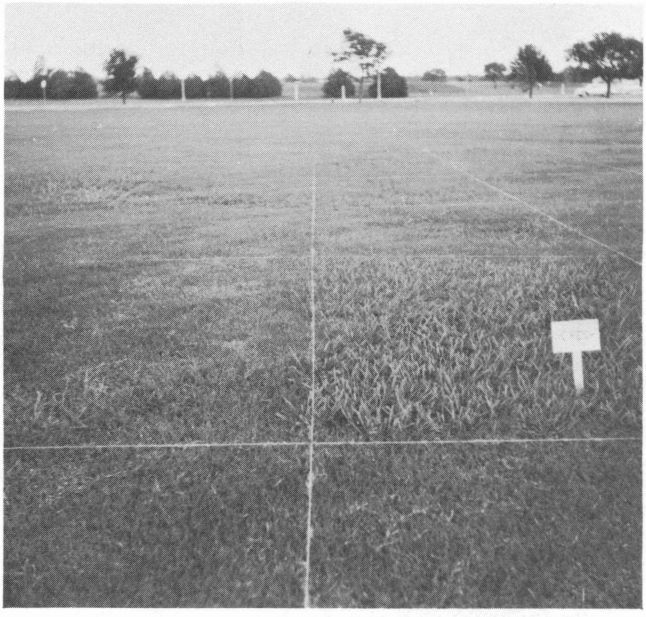
are maturing or growing slowly because of drouth or approaching dormancy. Chemicals to control upright or semiprostrate annual weeds, such as burclover, henbit, annual bluegrass, rescuegrass and sandbur, should be applied when the weedy plants are no taller than 3 inches. If taller, they should be mowed closely and the chemical applied after 3 to 4 days' regrowth. Low-growing annual weeds, such as carpet burweed and goathead, should be treated when the plants are young and before they bloom. Perennial weeds, such as dandelion, dock, matt chaff-flower, K. R. bluestem and smutgrass, should be treated when they are growing rapidly, but after they have developed considerable leaf area. *Thorough covering of the leaves and stems with the chemical is necessary for good weed control.*

The weeds listed in Table 1 are found commonly in lawns. Length of life, shown in Column 1, often determines choice of treatment. Annual plants begin growth each year from seed; biennial plants live through two growing seasons and usually do not make seed until the second season; and perennial plants live 3 or more years, coming back each year from vegetative parts, crowns, rhizomes and bulbs and from seed. Seasons shown in the third column, under "treatment period," indicate the time of year when chemical treatment will be most effective. This time will vary for some plants according to geographic location, from South to Central to North Texas and from East to West Texas.

Numbers given in column 4, under "chemical treatment" refer to the numbered chemical treatments



Dallisgrass-free plots of Bermudagrass were treated with disodium methylarsonate. The check plot was not treated.

described on pages 6-10. When more than one treatment is listed, they appear in order of preference. Some of the chemicals listed are poisonous and others are flammable. All should be handled carefully.

TABLE 1. COMMON LAWN WEEDS IN TEXAS

Weed	Length of life*	Treatment period	Chemical treatment
BROAD-LEAVED WEEDS			
Aster	P	Spring to summer	5
Bedstraw or cleavers	A&P	Spring	6-3
Burclover, black medic and true clovers	A	Fall and winter	1-4-5
Carpet burweed	A	Fall and winter	5-4
Chickweed	A&P	Fall to winter	1-6
Cornsalad or lamb's lettuce	A	Winter to spring	5
Cranesbill and filaree	A	Winter to spring	1-5
Crowpoison, wild onion and wild garlic	P	Fall and winter	6-4
Dandelion	P	Fall and winter	5
Dichondra or ponyfoot	P	Winter and spring	1-5
Dock	P&A	Fall and winter	5
Dwarf-dandelion	P&A	Fall and winter	5
Fogfruit	P	Spring	5
Fleabane	A&P	Winter to spring	5
Goathead	A	Spring	5-1-3
Heartleaf nettle	A	Winter and spring	6
Henbit	A	Fall and winter	1-5-4
Lespedeza	A	Spring	1-5-4
Mallow	A	Fall to winter	5-1-3
Matt chaff-flower	P	Spring	5-6
Modiola	P	Fall to spring	5
Morningglory	P&A	Spring to summer	5-6
Oxalis	A&P	Fall to spring	1-6-4
Pigweed (prostrate types)	A	Spring to summer	5
Plantain	A&P	Winter to spring	5
Poisonivy	P	Spring to summer	9-5

TABLE 1. COMMON LAWN WEEDS IN TEXAS—Continued

Weed	Length of life*	Treatment period	Chemical treatment
Prostrate lawnflower	P	Spring and summer	5-6
Ragweed	P&A	Summer to fall	5
Spurges (prostrate types)	A&P	Spring to fall	5-4
Sowthistle	A	Winter to spring	5
Sweetclover	A&B	Fall to spring	1
Vetch	A	Winter to spring	1-5-4
GRASSES AND GRASS-LIKE WEEDS			
Annual bluegrass	A	Fall and winter	1
Bahiagrass	P	Spring to summer	2-3
Barnyardgrass	A	Spring to summer	2
Bermudagrass	P	Spring to fall	9-3
Bluestems	P	Spring	2-3
Carpetgrass	P	Spring to summer	2-3
Crabgrass	A	Summer to fall	2-7
Crowfootgrass	A	Spring to fall	2-3
Dallisgrass and other paspalums	P	Spring	2-3
Dropseeds, incl. smutgrass	P&A	Spring to summer	2-3
Goosegrass (silver crabgrass)	A	Spring to summer	2-7
Johnsongrass	P	Spring to summer	2-3-9
Little barley	A	Fall and winter	1
Nutgrass	P	Spring to fall	8-9
Rescuegrass, cheat and other annual bromes	A	Fall and winter	1
Ryegrass	A	Fall and winter	1
Sandbur	A&P	Spring to summer	2
Sedge	P	Spring and summer	2-3
Signalgrass	A&P	Spring to summer	2-3
Texas wintergrass	P	Fall and spring	2-3
Tumblegrass	P	Spring to summer	2-3
Windmillgrass	A&P	Spring to summer	2-3

*A—Annual
B—Biennial
P—Perennial

Treatments

1. ENDOTHAL. For easy-to-kill, broad-leaved weeds, such as burclover and henbit, use 3 to 4 tablespoons of endothal per gallon of water. For grass-type weeds, such as rescuegrass and ryegrass, use 6 to 7 tablespoons of endothal per gallon of water. Use 1 teaspoon of liquid household detergent or commercial wetting agent, or use 3 tablespoons of dry household detergent per gallon of endothal-water mixture. Apply the mixture as a broadcast spray or as a mop until the leaves and stems of the weeds are wet.

For effective control, use the endothal when the weeds are small; if they are more than 3 inches high, mow them closely and then treat after 3 to 4 days' regrowth.

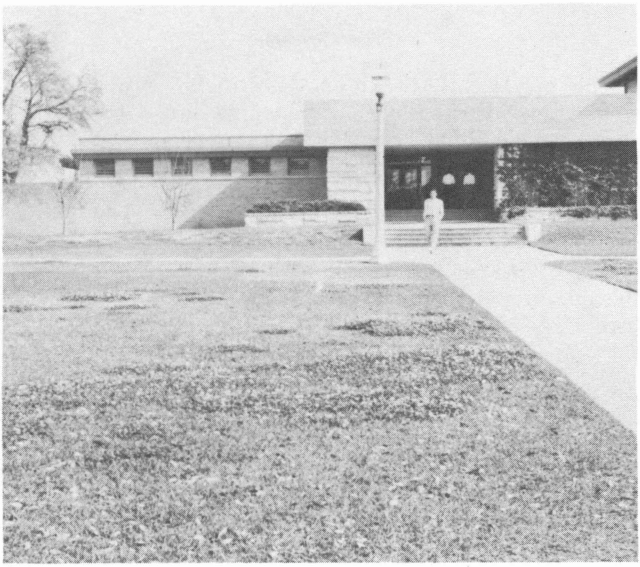
Caution: Endothal should not be applied to ryegrass or bluegrass, for it likely will kill them. The material may cause temporary discoloration on growing Bermudagrass or St. Augustinegrass. Endothal is toxic to all warm-blooded animals when taken internally. Avoid prolonged contact with the skin. Keep the material out of reach of children and domestic animals. Follow closely the directions on the container.

2. METHYLARSONATES. The methylarsonate compounds are used primarily for control of weedy grasses. Amine methylarsonate (AMA) comes in liquid form, while disodium methylarsonate (DMA) is available in liquid, wettable powder, and granular forms. The following chart shows the amount of each material to use in mixture with water.

Material	Tbsp. per gal. of water	Amount to use in 4 gal. of water for 1,000 sq. ft.
Amine methylarsonate, liquid	15	1 pt.
Disodium methylarsonate, liquid	15	1 pt.
Disodium methylarsonate, wettable powder	7	28 tbsp.
Disodium methylarsonate, granular	Follow manufacturer's directions	

A wetting agent may increase discoloration on the lawngrass, but it will make the treatment more effective. Use household detergent or commercial wetting agent at the rate of 1 teaspoon of liquid material or 3 tablespoons of dry material per gallon of chemical and water mixture.

Apply the disodium methylarsonate-wetting agent-water mixture as a spray or mop to thoroughly wet the stems and leaves of weedy grasses. Weedy grasses to be treated should be mowed 3 to 4 days before treatment. Treated areas should not be mowed or watered within 48 hours after application of the chemical. Disodium methyl-



White clover and other winter lawn weeds invaded this lawn when the St. Augustinegrass was thinned by disease.

arsonate will cause some discoloration on Bermudagrass, but it usually disappears in 7 to 14 days. The material kills St. Augustinegrass, but small spots killed by spot-treatment should be covered by new growth in 4 to 6 weeks.

Caution: The methylarsonate compounds contain arsenic which is poisonous. Avoid skin contact with the material and breathing the spray mist. Keep the material out of reach of children and domestic animals.

3. NAPHTHA. Apply naphtha as a coarse spray or mop to thoroughly wet the leaves and stems of weedy plants. Lawn grasses will be killed by naphtha, but dead spots should cover over in a few weeks. Naphtha is explosive and will blister the skin covered by saturated clothing.

4. AMMONIUM NITRATE. Dissolve 1 pound of ammonium nitrate per gallon of water. Allow the solution to settle a few minutes and strain it, if it is to be applied with a sprayer. Apply the solution broadcast with a sprinkler can or sprayer at the rate of 4 gallons per 1,000 square feet. Spot treatment should be avoided since the nitrogen will cause green spots that are difficult to eliminate. Mow the plants closely 3 to 4 days before treatment. The solution is very corrosive and sprayers or sprinkler cans used to apply it should be rinsed thoroughly. It may ruin the sprayer eventually, despite thorough rinsing.

Dry ammonium sulfate may be used as a substitute treatment, although it is not as effective because coverage

is not as good. The lawn should be mowed 3 to 4 days before treatment. Wet the plants thoroughly and apply 10 to 12 pounds of ammonium sulfate per 1,000 square feet while the leaves are wet.

5. 2,4-D. Use 2 tablespoons of the amine form of 2,4-D per gallon of water, provided its strength is 4 pounds of acid equivalent per gallon of concentrate. Follow directions on the container for mixing 2,4-D formulations that do not contain the 4 pounds of acid per gallon. Use a household detergent or commercial wetting agent at the rate of 1 teaspoon of liquid or 3 tablespoons of dry material per gallon of water.

Apply the 2,4-D solution as a mop or with a sprinkler can to thoroughly wet the leaves of weeds. Some weeds will start dying within 48 hours, others may require 2 weeks to show the effects. Broad-leaved annual weeds that are susceptible to 2,4-D can be killed with one application. Weeds less susceptible, especially some perennials, may require retreatment.

Caution: Use only the amine form of 2,4-D when possible. The ester forms are as effective but more volatile and more likely to damage desirable plants. Never apply 2,4-D under pressure; the drifting mist can cause severe damage to desirable shrubs, flowers and trees. Containers used to mix or carry 2,4-D solutions should not be used to apply other materials to flowers, shrubs or trees. Do not apply 2,4-D when the temperature is below 50 or above 90 degrees F.

6. SILVEX. Use 2 tablespoons of silvex per gallon of water with 1 teaspoon of commercial wetting agent or liquid household detergent or 3 tablespoons of dry detergent. Apply the solution in the same manner as suggested for 2,4-D. Follow the same precautions as described for 2,4-D. Mix and apply this chemical carefully since it may damage the lawngrass temporarily.

7. PRE-EMERGENCE TREATMENTS. Crabgrass and goosegrass may be controlled with pre-emergence application of Zytron, Dacthal, Bandane or Chlordane. These materials are available in various forms and concentrations. Application rates in terms of active ingredient per 1,000 square feet are: Zytron, 8 ounces; Dachtal, 4 ounces; Bandane, 12 ounces; Chlordane, 3 pounds. The following chart indicates the amount of certain formulations to apply to obtain these amounts of active ingredients. Other formulations and concentrations are available and should be used at equivalent rates of active ingredients.

These amounts of the liquid and wettable powder materials should be mixed in 4 gallons of water to treat 1,000 square feet. The dry materials may be applied with a fertilizer spreader. The chemical should be applied uniformly over the area being treated in early

March followed by thorough watering. The liquid materials may result in some discoloration of actively growing annual grasses such as ryegrass.

Material	Formulation	Amount to use to treat 1,000 sq. ft.
Zytron	4.4% granular	10 lb.
Zytron	3 lb. per gal. liquid	1 pt.
Dacthal	1.5% granular	15 lb.
Dacthal	75% wettable powder	5 oz.
Bandane	10% granular	7 lb.
Bandane	4 lb. per gal. liquid	1½ pts.
Chlordane	20% granular	15 lb.
Chlordane	74% liquid	½ gal.

Caution: These materials are harmful if swallowed. Avoid contact with skin. Observe precautions indicated on label. Keep children and pets off treated areas until material is washed into soil.

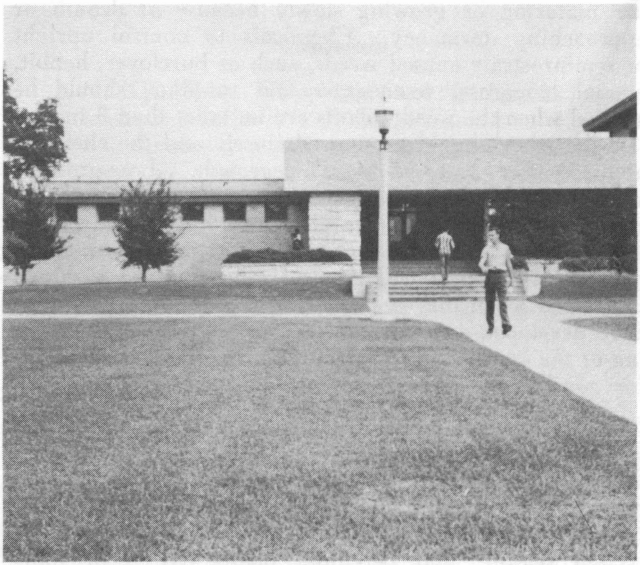
8. NUTGRASS CONTROL IN BERMUDAGRASS. Use amine methylarsonate (16% active ingredient) at the rate of 10 tablespoons per gallon of water and apply to thoroughly wet the foliage. Repeat every 3 to 4 weeks until at least 4 applications have been made or until no nutgrass regrowth occurs. For larger areas use 1 pint of amine methylarsonate in 4 gallons of water per 1,000 square feet. Use a wetting agent as described under treatment 2, methylarsonates. Note: Bermudagrass discoloration may occur following each application but the grass will recover in 7 to 10 days. Do not apply this material to St. Augustinegrass.

Caution: The same cautions should be observed as noted under the methylarsonates.

9. TREATMENTS FOR NONTURFED AREAS. The treatments suggested here are for hard-to-control weeds occurring in driveways, parking areas, fencelines and similar areas that are not turfed. *Do not use these treatments on lawns or other turfed areas.*

To control Johnsongrass and Bermudagrass, use ½ pound of sodium dalapon per gallon of water. Apply the solution as a coarse spray to thoroughly wet the leaves of the grass. Dalapon is slightly corrosive and it kills most grasses. Do not saturate the root area of valuable flowers, shrubs and trees. Wait 5 to 7 weeks before planting areas treated with dalapon during the growing season.

Use naphtha or similar solvent oils for nonselective spray application to nutgrass, Bermudagrass and Johnsongrass. Apply the oil to thoroughly wet the stems and leaves. Re-treat when regrowth occurs. These oils are flammable and will blister the skin covered by saturated



One application of endothal eliminated the clover and other winter lawn weeds.

clothing. Naphtha kills or defoliates any plant to which it is applied.

To control poisonivy, use 1½ tablespoons of amino triazole, (sold as Amitrol and Weedazol), or 4 tablespoons of silvex per gallon of water. Spray the solution on stems and leaves of individual plants. Pull poisonivy vines away from trees and shrubs with a rake or hoe before applying the chemicals. These solutions will damage lawngrasses and will kill flowers, shrubs, and trees. Containers used to mix or apply amino triazole, or silvex, should not be used to apply other materials to flowers, shrubs, or trees.

Knapsack, trombone type, gravity-flow and hose-attachment sprayers may be used with materials that are to be applied as a spray. Sprinkler cans that deliver fine streams or small droplets can be used to apply some chemicals. A mop for applying 2,4-D, silvex and other chemicals is easily made by tying a sponge or cloth to a stick.

Delay broadcast spray applications for weed control on newly seeded lawns until the grass has been mowed two or three times.

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